

The Periodic Table and Bonding Lab 1: Building the Table

Step 1: Complete the squares for each element by adding the atomic number, name, and atomic mass.

Write the atomic number at the top of the square.
Write the element's name under the symbol.
Write the atomic mass at the bottom of the square.

Step 2: Determine the number of protons, neutrons, and electrons in each element.

Step 3: Create a Bohr diagram for each element.

Step 4: Draw the Lewis Structure for each element.

Step 5: Use the following colors to shade the borders for each element. You should ONLY color in the borders and not the entire card.

Green = Li & Na
Orange = B & Al

Pink = O & S
Red = C & Si

Blue = Be & Mg
Tan = N & P

Purple = F & Cl
Yellow = He, Ne, & Ar

Step 6: Cut the cards apart and arrange according to atomic number in the pattern shown below. Once you have the cards arranged in the correct order, glue them to a large sheet of construction paper.

1								2
3	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	18	

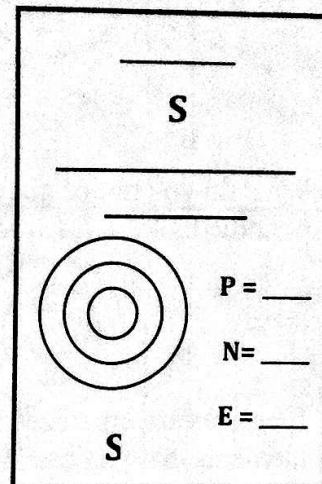
Step 7: Answer the following questions using the information on your Periodic Table.

1. Which elements had complete outer shells? Give the name and symbol for each.

2. What do you notice about the location of the elements in #1? (Be specific)

3. Which elements had only one valence electron? Give the name and symbol for each.

4. What do you notice about the location of the elements in #3? (Be specific)



5. What do you notice about the number of valence electrons as you move from left to right across a row or period in the periodic table? (Na, Mg, Al, Si, P, S, Cl, Ar)

6. What do you notice about the number of energy levels or shells as you move down a group or column in the periodic table? (H, Li, Na)

7. Elements are organized into families according to their physical and chemical properties. Identify the elements that you used in Step 5 that belong to each family based on the number of valence electrons. Give the name and symbol for each element.

Alkali Metals - 1 valence electron _____ & _____

Alkaline Earth Metals - 2 valence electrons _____ & _____

Boron Family - 3 valence electrons _____ & _____

Carbon Family - 4 valence electrons _____ & _____

Nitrogen Family - 5 valence electrons _____ & _____

Oxygen Family - 6 valence electrons _____ & _____

Halides - 7 valence electrons _____ & _____

Noble Gases - Complete outermost shell _____, _____, &

8. What do you notice about the location of the elements in each family?

9. How would you classify hydrogen? Why?

10. Predict the number of valence electrons for each element based on its location in the Periodic Table of Elements. You will need to use the periodic table provided to you.

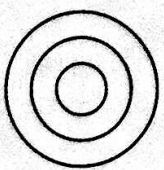
Barium = _____

Lead = _____

Xenon = _____

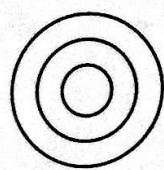
Potassium = _____

S




P = ____
N = ____
E = ____

Mg



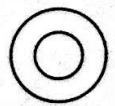
P = ____
N = ____
E = ____

H



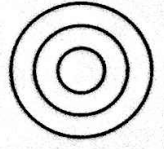
P = ____
N = ____
E = ____

N




P = ____
N = ____
E = ____

Al



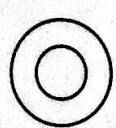
P = ____
N = ____
E = ____

F



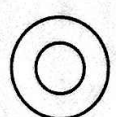
P = ____
N = ____
E = ____

B



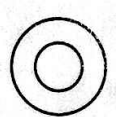
P = ____
N = ____
E = ____

Li




P = ____
N = ____
E = ____

Ne



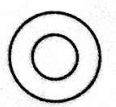
P = ____
N = ____
E = ____

He



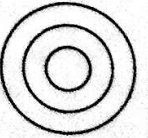
P = ____
N = ____
E = ____

C



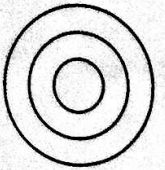
P = ____
N = ____
E = ____

P



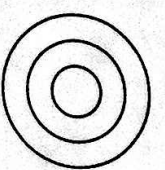
P = ____
N = ____
E = ____

Ar



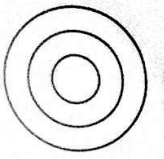
P = ____
N = ____
E = ____

Si



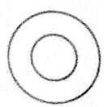
P = ____
N = ____
E = ____

Na




P = ____
N = ____
E = ____

Be



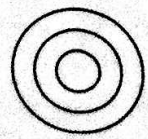
P = ____
N = ____
E = ____

O



P = ____
N = ____
E = ____

Cl



P = ____
N = ____
E = ____